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DEVICE FOR INTRODUCING TEAT CUP LINERS INTO TEAT CUPS

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FIG. 1.

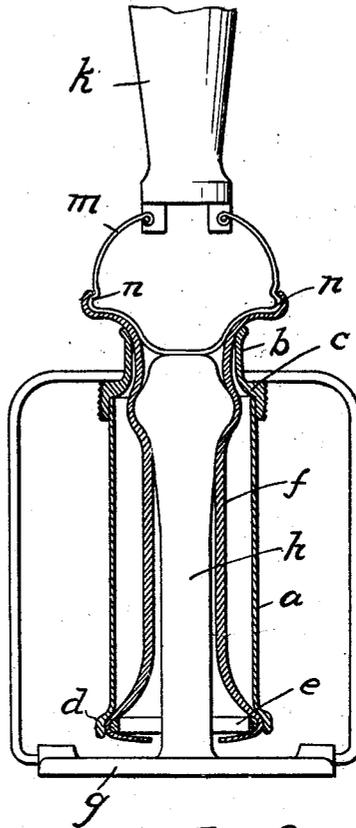
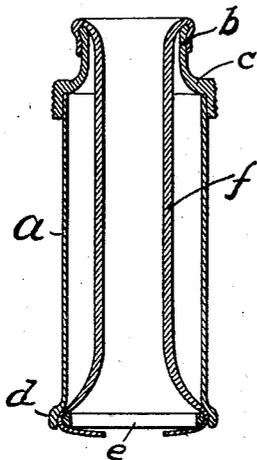


FIG. 2.

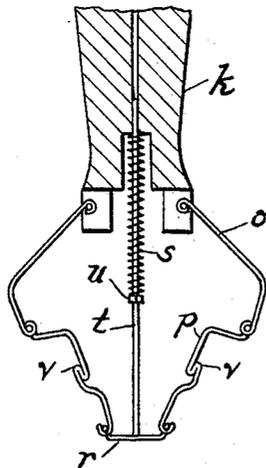


FIG. 3.

WITNESS:

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UNITED STATES PATENT OFFICE

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DEVICE FOR INTRODUCING TEAT-CUP LINERS INTO TEAT CUPS

Application filed February 28, 1928, Serial No. 257,566, and in Sweden February 9, 1928.

The object of the invention is to provide means that, in the operation of securing the rubber liner to the metal shell of a teat cup, will effect or facilitate the folding of the liner around the end of the shell.

Preferred embodiments of the invention are shown in the drawings, in which—

Fig. 1 is a longitudinal sectional view of an assembled teat cup.

Fig. 2 is a longitudinal sectional view of a device for inserting, stretching or holding the liner in the shell, associated with a contrivance, embodying my invention, for folding the projecting end of the liner around the end neck of the shell.

Fig. 3 is a similar view of a modified liner-folding contrivance embodying my invention.

The teat cup, which is of known construction, comprises a cylindrical shell, preferably having (secured thereto or integral therewith) a contracted neck *b* connected with shell *a* by a shoulder *a*; a flexible and elastic (rubber) liner *f*; and a ring *e*, which expands the end of the liner intended for engagement with the teat and confines it within the enlarged mouth *d* of shell *a*. The other end of the liner extends beyond the neck *b* and is folded down over the outside of the neck.

In order that the teat cup shall work satisfactorily, it is necessary, in assembling the liner and shell, to stretch the liner and maintain it stretched while its end is folded around the neck of the shell. The proper insertion of the teat cup by hand involves the exercise of considerable muscular force as well as a degree of skill which can be attained only by repeatedly performing the operation.

It is known to effect or facilitate the operation by employing mechanical devices that maintain the liner stretched while folding its projecting end around the end of the shell. While such mechanical devices do facilitate the insertion of the liner into the shell, they do not satisfactorily eliminate the difficulty of folding the liner around the end of the shell.

It is advisable or necessary, however, in

using my improvement, to maintain the liner in stretched condition while folding its end over the end neck of the shell. Any appropriate device may be used for this purpose. The device shown is suitable. This device comprises a base *g*, which supports a standard *h* having an enlarged head which stretches the liner while it is being inserted therein and which expands the liner near the end thereof which is to be folded over the shell and tends to prevent the liner from contracting and to hold the end thereof projecting beyond the shell neck from being drawn, by the elasticity of the liner, within the shell neck.

The folding contrivance, in the embodiment of the invention shown in Fig. 2, comprises a handle *k* carrying plate springs *m*. Two such springs may be conveniently made in one piece of an approximate U-shape, the yoke end of the same being adapted to extend into the liner and engage the end of standard *h*. Each spring is provided, between its ends, with a bend or projection *n*.

When the contrivance is partly inserted into the teat cup, and the handle *k* forced down, the springs *m* change their form; that is, they are expanded radially of the axis of the teat cup and are more or less flattened. The bends *n* engage the liner near its end, and, while the change of form of springs is proceeding, the projecting end of the liner is displaced toward a plane at approximately right angles to its axis. The bends *n* are so shaped that the end of the liner cannot slip off until after it is so displaced radially that it readily folds or is foldable down around the end of the shell neck and forms a collar around the same.

It is not necessary that the members should have a spring action, although it is advisable that the movement of the folding contrivance into folding position shall be yieldingly or flexibly resisted. In Fig. 3 a contrivance is shown in which, for a spring *m*, is substituted two arms, rods or links, *o* and *p*, arranged to form a toggle joint or elbow joint. Links *o* are pivotally attached to handle *k*. Links *p*, which are respectively pivoted to links *o* are pivotally attached to a

plate *r* adapted to engage the end of standard *h*. Plate *r* is carried by a rod or bar *t* which is slidable in the handle. A coil spring *s* is confined between the base of a recess in the handle and a collar *u* on the bar. Links *p* are provided with bends or projections *v*, which function like the bends *n* of Fig. 2.

In operation, the contrivance is positioned so that plate *r* engages the end of standard *h*. The handle *h* is forced down against the action of spring *s* and the arms of the toggles swing out. The bends *v* engage the liner near its end and the projecting end of the liner is displaced, just as in the operation of the device of Fig. 2, and the end of the liner slips off the links *p* and is folded down to form the desired collar around the teat cup neck.

It should be understood that the liner-holding device (the shell *a*) with which my improved folding contrivance is described as cooperating is no part of my invention, which is designed to cooperate with any suitable means for holding the liner while it is being folded and with a suitable stop, such as the standard *h*, for compelling a change in form of the liner to effect the folding action. It should be understood, also, that the specific folding contrivances described are simply illustrative of my invention, which is susceptible of other specific embodiments.

Having now fully described my invention, what I claim and desire to protect by Letters Patent is:

1. A contrivance for folding the ends of a teat cup liner upon a teat cup which comprises a handle, members carried thereby whose ends are insertable into the projecting end of the liner, said members being displaceable in a radial direction to effect a similar displacement of the end of the liner, and means on said members adapted to maintain the liner in engagement with said members until the end of the liner is brought into such position that when it slips off said members it forms a collar folded over the teat cup shell.

2. A contrivance for folding the end of a teat cup liner upon a tea cup shell comprising a handle, a bar carried by, and slidable longitudinally of, the handle, and pairs of links, the links of a pair being pivotally connected to each other and in pivotal connection respectively with the handle and the end of said bar, the links connected with said bar being adapted to engage the projecting end of the liner and bend it outward over the shell as the handle is moved toward the teat cup.

3. Means for folding the end of a teat cup liner upon a teat cup shell which comprises the combination, with a holder for maintaining the liner stretched on the shell, of a liner-folding contrivance adapted to partly extend into the end of the liner and engage the end of said holder and to be pressed against the holder, said contrivance being deformable,

under such pressure, to displace the end of the liner over the shell.

4. Means for folding the end of a teat cup liner upon a teat cup shell which comprises the combination, with a stop in relatively fixed relation with the teat cup, of a liner-folding contrivance which is adapted to partly extend into the end of the liner and which is deformable, by pressure against said stop, to displace the end of the liner outward over the shell.

5. A contrivance for folding the end of a teat cup liner upon a teat cup shell beyond which the liner projects, which comprises radially displaceable members adapted to engage the liner near its end and confine it against the circumferential edge of the shell, and means to radially displace said members and thereby displace over the shell the end of the liner projecting beyond the shell.

6. A contrivance for folding the ends of a teat cup liner upon a teat cup shell which comprises radially expansible members insertable within the end of the liner projecting beyond the shell and adapted to displace said liner end outward over the shell, and means to so expand said members, there being projections on said members adapted to engage the liner near its extremity and hold the liner while it is being so displaced.

In testimony of which invention, I have hereunto set my hand, at Stockholm, Sweden, on this 9th day of February, 1928.

MARTIN BERNHARD BENGTON.